



# COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION  
1401 EAST BROAD STREET  
RICHMOND, VIRGINIA 23219 2000

**Charles A. Kilpatrick, P.E.**  
Commissioner

July 29, 2016

## MEMORANDUM

From: Chris Swanson, P.E.  
State MS4/Stormwater Engineer

A handwritten signature in blue ink, appearing to read "Chris Swanson", written over the printed name and title.

Subject: Pending New VDOT Approved Product List  
For Stormwater Manufactured Treatment Devices (MTDs)

VDOT has just completed an extensive review of the criteria that needs to be considered for products to be included on the subject approved products list. All vendors interested in having their products considered for inclusion on the list must apply by close of business November 18, 2016. This requires filling out the required information as identified in Appendix A of this letter, and submitting to Chris Swanson, P.E. at:

Virginia Department of Transportation  
1401 E. Broad Street  
Richmond, Virginia 23219

To be considered for inclusion the device must have approval, by the Virginia Department of Environmental Quality (DEQ) for use in Virginia, as noted on DEQ's Virginia Stormwater BMP Clearinghouse website, found online at: <http://www.vwrrc.vt.edu/swc/ProprietaryBMPs.html>. Attachment A lists the MTDs that DEQ have approved for use in Virginia. Vendors may submit applications for the inclusion of any or all of their Virginia-approved devices.

The new criteria against which the product will be evaluated for inclusion on the list are shown in Attachment B. The criteria considers both the operation and performance of the device as well as a normalized life-cycle cost. Upon completion of the review of applications, the new list will be published with approved products. VDOT reserves the right to request clarification, either through written correspondence or a face-to-face meeting, on information submitted.

In the future, vendors with products on this particular approved product list will be notified and required to resubmit a New Product Application in approximately 3 years so VDOT can ensure the product has not changed, the application is up to date regarding performance, or the evaluation criteria are still appropriate.

Guidance on the use and application of this approved product list will be provided in subsequent versions of IIM-LD-195. The most up-to-date version of IIM-LD-195 is maintained at the following website:

[http://www.extranet.vdot.state.va.us/locdes/electronic\\_pubs/iim/IIM195.pdf](http://www.extranet.vdot.state.va.us/locdes/electronic_pubs/iim/IIM195.pdf)

## ATTACHMENT A

### VIRGINIA DEQ-APPROVED STORMWATER MANUFACTURED TREATMENT DEVICES (MTDs) (eff. 22 FEBRUARY 2016)(July 2016 updated)

Manufacturer	Hydrodynamic Devices	% TP Rem	Filtering Devices	% TP Rem
Aqua Shield, Inc.	Aqua Swirl Stormwater Treatment System	20	Aqua Filter Stormwater Filtration System	40
Advanced Drainage Systems, Inc.	Storm Water Quality Unit	20		
Storm Tech (a division of ADDS, Inc)			StormTech® Isolator Row™	40
Baysaver Technologies LLC	Bay Separator	20	BayFilter Stormwater Cartridge System	50
Contech Engineered Solutions LLC	Continuous Deflective Separator (CDS)	20	StormFilter with Phosphosorb media	50
	Vortechs		StormFilter with ZPG media	45
	The Vortechs System	20	Filtterra Bioretention	50
			Jellyfish Filter	50
CrystalStream Technologies	CrystalClean Separator – Single Vault	25	-----	---
Environment 21	Storm Pro	20	-----	---
	V2B1	20		
Hydro International	Downstream Defender	20	Up-Flow Filter with CPZ media	40
	First Defense	20		
Hydroworks	Hydroguard	20		
Modular Wetland Systems	-----	---	Modular Wetland Systems Linear	50
Oldcastle	Dual Vortex Separator	20	Perk Filter	50
Rinker Materials	Stormceptor MAX	20		
	Stormceptor STC	20		
	Stormceptor OSR	20		
Terre Hill	Terre-Kleen Hydrodynamic Separator	20		
Brentwood Industries			StormTank Module Debris Row	20
Convergent Water Technologies, Inc			FocalPoint High Performance Modular Biofiltration System (HPMBS)	50

## **ATTACHMENT B**

### **CRITERIA FOR VDOT APPROVED PRODUCTS LIST OF STORMWATER MANUFACTURED TREATMENT DEVICES (MTDs)**

**This information is to be provided by the vendor in the application for approval**

#### **NAME, MODEL NUMBER AND PURPOSE OF DEVICE AND HOW IT WORKS**

1. Identify device:
  - a. Manufacturer/Vendor name
  - b. Name of Manufacturer/Vendor Representative
  - c. Manufacturer/Vendor Contact Information
    - 1) Mailing Address
    - 2) Email Address
    - 3) Telephone Number
    - 4) FAX Number
  - d. Device name
  - e. Device model number
  - f. Device type (e.g., hydrodynamic swirl concentrator, filter, etc.)
  - g. Purpose of the device (e.g., what pollutants it removes)
  - h. How the device operates to accomplish that purpose (e.g., physical/chemical process).
  - i. Name and contact information of manufacturer contact for project design assistance, if different from 1b and 1c above

#### **ADVANTAGES OF DEVICE**

2. List of perceived advantages that use of the device will provide to VDOT, reflective of the kinds of construction in which VDOT is typically engaged (primarily linear roadway/highway construction).

**COST** (for consistency, costs ideally based on 2010 dollars; state if otherwise)

3. Typical inspection cost and frequency for Washington DC metro region
4. Typical maintenance costs and frequency (based on the following):
  - a. Cost based on average labor, equipment and materials costs for the Washington DC metro region
  - b. Provide cost range (from simple, routine inspection and maintenance, such as cleaning out the device, to the maximum cost likely to occur – e.g., structural repairs – based on manufacturer experience
  - c. For purposes of calculating annualized costs per acre treated, use the value that is 1/4 x the average of that cost range, including inspection cost x frequency during one year

5. Cost of routine maintenance replacement parts (filter units, etc.) AND whether any of these *must* be purchased from and/or installed by only the manufacturer or its service provider.
6. Calculate the annualized average cost for the least expensive and most expensive models of the MTD (i.e., the cost of the MTD per acre treated per year), using the following BMP Cost Equation used in the USEPA Chesapeake Bay Program's CAST/MAST/VAST Models:

$$\text{Annualized cost} = (\text{capital cost} \times \text{annualization factor}) + \text{annual inspection-O\&M costs} + (\text{land} \times \text{annualization factor}),$$

where:

Capitol cost = device cost + installation/construction cost

Annualization factor =  $i / [(1+i)^n - 1] + i$ , where:

$i$  = annualization rate, which is always 5%

$n$  = period of annualization (same as the MTD's lifespan or service life)

Land value = \$252,095/acre, the 2015 Q1 land value for the Washington DC metro area, derived from the Lincoln Institute of Land Policy's "Land Prices for 46 Metro Areas," online at:

<https://www.lincolninst.edu/subcenters/land-values/metro-area-land-prices.asp>

7. Service life (manufacturer's stated life-span, in years) of the device
8. Total life-cycle cost for the least expensive and most expensive models of the MTD, calculated using the same formula as used in the CAST/MAST/VAST (i.e., the Chesapeake-, Maryland-, and Virginia-Assessment and Scenario Planning Tools), as follows:

Total life-cycle cost = Annualized cost x MTD life-span (in years)

## PERFORMANCE

9. Provide the pollution removal efficiency rating assigned to the treatment device for removing Total Phosphorus (TP) by the Virginia Department of Environmental Quality (DEQ), as posted on the Virginia Stormwater BMP Clearinghouse website at:

<http://www.vwrrc.vt.edu/swc/ProprietaryBMPs.html>

10. State the hydraulic loading rate for the device associated with the testing of the device's pollution removal performance and the resulting removal efficiency rating.

## **DESIGN AND CONSTRUCTION**

11. List of any national design/construction standards that must be met by the device and a certification that any of these standards that applied to the manufacturing of the device have been met.
12. List any (a) design/construction/sizing limits and (b) special installation considerations (e.g., specialized equipment, maneuvering space, etc.) that apply to the device.
13. Typical constructed surface footprint of the smallest and largest of the device (sq. feet).
14. Provide the manufacturer's website link for design-specific information and/or design assistance

## **INSPECTION AND MAINTENANCE**

15. List the items that must be inspected at each routine inspection.
16. Will maintenance of the device require confined space entry permits and procedures? If so, under all conditions, or only certain conditions (describe these)?
17. List the items that are considered routine maintenance, when necessary (e.g., sediment/debris removal, pressure washing, filter/cartridge replacement, refuse disposal, etc.)
18. Provide the manufacturer's website link for inspection and maintenance information and recommendations